CHAPTER 1

GENERAL INFORMATION

1-1. Purpose.

This manual provides guidance for design and rehabilitation of railroad track, terminals, and loading facilities, including information related to construction.

1-2. Scope.

a. The guidance in this manual is primarily for railroad lines operated at lower speeds and with lower traffic volumes than those most commonly found in the commercial industry. The guidance on terminal design is for small terminals handling military cargo: primarily tracked or wheeled vehicles and intermodal containers.

b. This manual, supplemented with the specified references, should provide sufficient information for general purposes. Most projects, however, include some aspects that are very site-specific or some conditions which are not common. Designers are encouraged to obtain assistance when unusual or unfamiliar situations are encountered.

1-3. References.

Appendix A contains a list of references used in this manual.

1-4. Organization and Use of the Manual.

a. Applying the material in this manual. Designing a railroad involves satisfying many objectives, which often conflict. Throughout the process the designer must prioritize project objectives and decide to what extent one objective may be sacrificed to satisfy another. It is the proper balance of these compromises, specifically matched to each situation, which produces a good railroad design.

b. New lines and terminals. For designing new railroad lines and terminals, chapters 2 through 4 and 6 through 8 of this manual are required. The design process is summarized in these steps:

(1) Determine the traffic and load carrying requirements-estimate the number of cars to be handled over the line and the magnitude of the wheel loads the track must support.

(2) Determine the terminal and support facilities requirements-from the type and magnitude of traffic to be handled, determine the number, size, and location of loading and unloading facilities (terminals), sidings, wyes, and other support facilities and auxiliary tracks.

(3) Establish route profile and alignment guidelines-based on load carrying requirements, maximum desired speed, locomotive pulling capability, and other operating needs and conditions, select maximum effective grade, horizontal and vertical curvature, and other profile and alignment specifications.

(4) Select the route-through an iterative process, select the best route and profile between the terminals and the connecting commercial carrier (usually the nearest commercial railroad line).

(5) Design the track, roadway, and terminal and support facilities-from the traffic and wheel load estimates and the characteristics of the selected route, determine track, roadway, and drainage requirements.

c. Rehabilitation. For rehabilitating existing lines and facilities, chapters 5 through 8 are required, along with portions of chapter 2.

1-5. Supplementary Material.

Listed below are references and other material which are generally required for railroad design and rehabilitation. Full citation of references is given in appendix A:

(1) AREA Manual for Railway Engineering and Portfolio of Trackwork Plans.

(2) Installation Transportation System Capability Study.

(3) Drainage design guides.

(4) Railroad Track Standards (TM 5-628/AFR 91-44).

(5) Detailed maps (including contour maps) of the area through which the railroad will run.

1-6. Using the Area Manual for Railway Engineering.

a. The American Railway Engineering Association's Manual for Railway Engineering is a standard industry reference and is cited throughout this technical manual. It contains a wide range of guidance to cover a variety of needs, with emphasis on commercial lines carrying substantial freight traffic. As a broad range of specifications is often given, proper use of the AREA manual requires that the designer select the particular specifications which are most appropriate for a particular project.

b. The AREA manual is written primarily for the commercial carriers, which have their own company policies and procedures. The material was prepared with the assumption that many details need not be covered, as a company's own

practices would govern. Therefore, it is usually necessary for military designers to provide details above and beyond the material contained in the AREA manual. In addition, requirements for operation on military railroads may sometimes differ from those commonly found on commercial carriers. In these cases, the design guidance in this technical manual may vary from that found in the AREA manual.

c. For these reasons, when preparing designs and specifications, the use of general statements such as ". meeting AREA specifications" should be avoided. Such statements often leave the choice of materials or procedures wide open and can lead to an undesirable or unsatisfactory product. Designers should clearly specify the work to be done and the acceptable materials for use in construction.

1-7. Applicability of State and Commercial Railroad Standards.

a. States often have standards, particularly for clearances, which should be met during new construction or rehabilitation. These standards may be obtained from the appropriate state departments of transportation and public utilities.

b. In addition, designers should assure that any new or rehabilitated track which will be regularly operated over by a commercial railroad will be in compliance with their track requirements.

1-8. Sources of Assistance.

a. Designers are encouraged to call for assistance when questions arise on the best choice to lit a particular situation or for further interpretation of material in this technical manual or other references. Assistance may be obtained rough the Army Transportation Systems Mandatory Center, Missouri River Division, Omaha, E (CEMRD-ED-TT) or Air Force HQ FCESA/ENC.

b. Particularly for installations which depend on the connecting commercial carrier for service, either for routine traffic or only during a mobilization, that carrier should be consulted at least bout the arrangement of the interchange yard and preferably for other suggestions on track arrangement to promote more convenient service.